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HOW TO REDUCE WEEVIL WASTE IN SOUTHERN CORN

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28 OCT. 1918
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FARMERS' BULLETIN 915
UNITED STATES DEPARTMENT OF AGRICULTURE

Contribution from the Bureau of Plant Industry
WM. A. TAYLOR, Chief

Washington, D. C. February, 1918

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WASHINGTON : GOVERNMENT PRINTING OFFICE : 1918

IN WEEVIL-INFESTED REGIONS ears with poor shuck coverings are damaged before the corn can be stored.

To store corn with short, loose shucks results in greatly increased loss.

Shucks that extend beyond the tips of the ears and close tightly about the silks are weevil proof both in the field and in storage.

Feed or sell the unprotected ears as rapidly as possible.

Store the weevil-proof ears in their shucks.

Select the best ears, in the field if possible, for next year's seed. Be sure that these ears have long, tight shucks, so that your next crop will have better shuck protection.

If necessary to store corn that does not have good shuck protection, the damage will be reduced if the corn is shucked, shelled cleaned, and put in bags of close-woven cloth.

A slatted crib lined with galvanized-wire netting having ¼-inch meshes is ideal for the storage of the bags of grain, because it gives good ventilation and excludes rats and mice.

HOW TO REDUCE WEEVIL WASTE IN SOUTHERN CORN.

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CORN GROWING IN THE SOUTH.

THE SOUTH is wonderfully adapted for corn growing, and the production of this valuable food crop is increasing rapidly. A serious obstacle to the increase of profitable corn production in many sections is the prevalence of insects which have made it impracticable to hold the crop until it can be most profitably used.

It is the custom in Southern States to store the corn crop in its shucks, because it is more or less vaguely known that some of the ears are protected by their shucks. It is also well known that many of the ears with a poor shuck covering become infested, and often badly damaged, both in the field and in storage. Yet the storing of these infested ears along with the shuck-protected ears is still the usual practice.[1]

Just now, when it is essential that all possible waste be prevented and that food production be increased as much as possible, it is fortunate that a method can be announced which can be immediately used to effect a great reduction in insect damage.

POOR SHUCK PROTECTION RESULTS IN SERIOUS DAMAGE.

It has been found that, in weevil-infested sections, the ears with tips protruding from the shucks or with loose, open shucks usually become infested and often seriously damaged before they can be safely stored and that many of them after several months in storage are worthless (fig. 1).

GOOD SHUCK COVERINGS MAKE EARS WEEVIL PROOF.

Experiments have shown that shuck coverings extending well beyond the tips of the ears and closing tightly about the silks, if not opened by other means, will resist weevils successfully, both in field and in storage (fig. 2). When the weevils have been confined with shuck-protected ears and have had no other source of food, they have

[1] The Bureau of Entomology has long recognized the value of a long, tight husk as a protection against weevils, and the growing of such corn has been practiced by some southern farmers with satisfying results.

not been able to cut through to the grain and have starved as a result. The average results with 14 representative southern varieties show about 40 per cent of the ears to be weevil proof in this way.

EARWORM DAMAGE REDUCED BY GOOD SHUCK COVERING.

Investigations indicate that the earworm is the greatest handicap to shuck protection against weevils. Under ordinary planting conditions [1] it has been found that fully half of the weevil-proof shuck coverings are opened by worms, and through the holes thus made weevils often reach the grain. However, it was found also that weevil-proof shucks through which worms had cut holes afford much

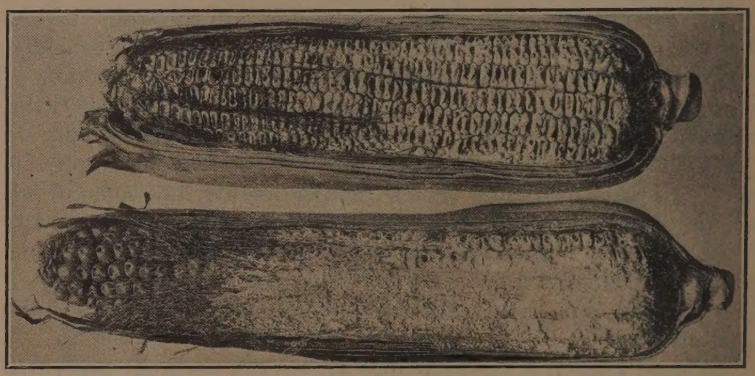

FIG. 1.—Ears of corn with poor shuck protection after 10 months in field and storage where weevils were very abundant. Avoid this loss by selling or feeding corn with short husks.

better protection against weevils than those but poorly inclosing the ears.

Earworms usually enter the shuck covering through the silk channels, feeding on the silks as they go, and the holes through the shucks are made when the worms are leaving. It has been found that when there is a long shuck extension, the worms frequently cut from the silk channels before reaching the ear, and the longer the extension the more frequently this happens. In this way shuck extension prevents worms from directly damaging the grain and from opening the way for weevils and mold.

THE CORN BREEDER'S OPPORTUNITY.

Here is a rare opportunity for the corn breeder. Not only should he strive to produce a variety in which all of the ears will be clothed with shucks that extend tightly beyond the tips of the ears, but the shuck extension should be several inches long (fig. 3).

[1] Small areas of corn caused to mature out of season invite concentrated attacks by the earworms. For this reason corn produced by exceptionally early maturing varieties or from exceptionally late plantings of common varieties may have practically all of the shuck coverings cut by worms.

A PRACTICAL SYSTEM OF MANAGEMENT.

It is evident from the results obtained that so far as weevil damage is concerned the advantage or disadvantage of storing corn in the shucks is determined by the kind of shuck covering on the ears stored. In all varieties that are exposed in the field there are more or fewer ears with poor shuck coverings that have become infested with weevils. To store such ears in their shucks after the grain has become infested is to make conditions most favorable for the insects. To shuck such ears in the field is to leave a part of the insects behind, but as the ears will still contain adults, larvæ, and eggs, destruction will continue, and they will remain a source from which uninfested but exposed corn may become infested. On the other hand, there are more or fewer ears in varieties native to weevil-infested sections which, because of their effective shuck covering, do not become infested with weevils. To store such ears in their unopened shucks is to afford them continued protection. To shuck such ears is to expose them to the attacks of insects, including the Angoumois grain moth, unless they are protected by other means. The average farmer does not use other effective means of protection because they involve additional cost, and, in the case of fumigation with carbon disulphid, extra fire risk. Even in the case of those storing their corn in unusually tight bins and fumigating with large quantities of carbon disulphid two or three times a year, the insect damage usually continues, though at a slower rate than otherwise would be the case.

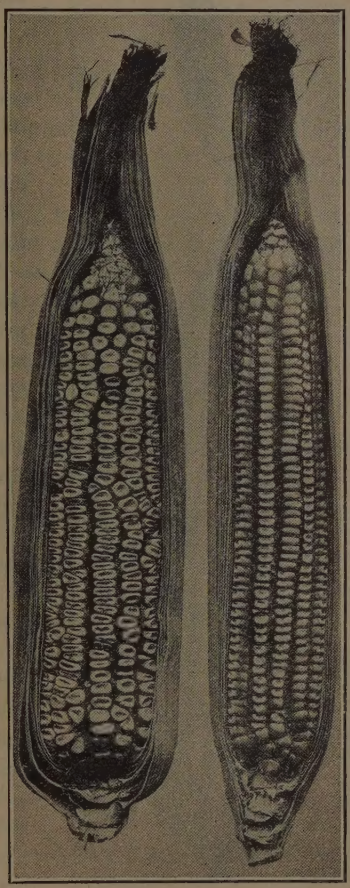

FIG. 2.—Ears of corn with good shuck protection after 10 months in field and storage where weevils were very abundant. Keep this kind of corn for storage. Select the best ears with long tight husks for next year's seed.

Shuck protection involves no additional cost and no extra fire risk and is effective to the extent of its development. Therefore, to

minimize the loss due to insects the following general plan is recommended to the average corn grower in weevil-infested sections: *Grow the best shuck-protected corn; store the weevil-proof ears in their shucks; and shell and clean and feed or sell the unprotected ears as early as possible.*

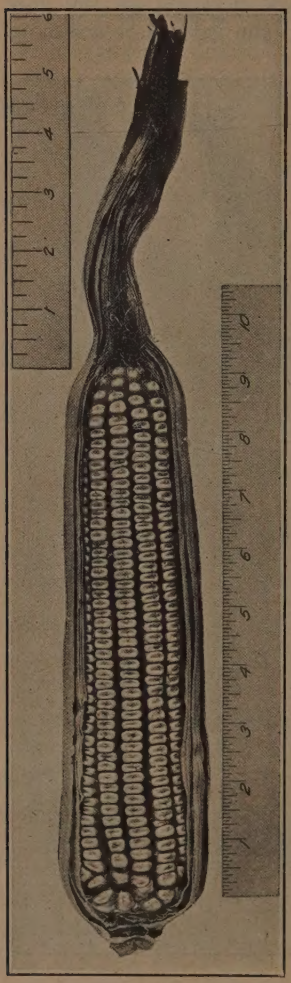

FIG. 3.—The breeder's ideal ear of corn. Shuck protection like this will reduce insect damage in the field and in storage to a negligible quantity.

HARVESTING, SORTING, CLEANING, AND STORING.

The harvesting should be done as soon as the corn is sufficiently dry. After harvesting, the ears should be sorted into two classes. This can be done rapidly with ordinary farm labor at a time when it is too wet or stormy for field work.

The first class should include all of the ears that apparently have weevil-proof shucks. These ears should be stored in their shucks until such time as they are needed.

The second class should include all ears with tips protruding beyond the shucks, with loose or open shucks, and any others that are probably infested with weevils. These ears require immediate attention to minimize the loss, as the weevils in them will continue to multiply except during the coldest part of the winter season. As the shucks of poorly covered ears are no protection, they should be removed. Already some of the ears may be partially consumed and contain adult insects, larvæ, and eggs. These should be kept separate and are best suited for poultry feed. All the ears showing slight infestation should be shelled and the grain cleaned to remove the live weevils. If the sheller has fans and riddles it may not be necessary to run the corn through a separate cleaner. If the sheller has no cleaning devices, a fanning mill will serve the purpose.

The shucking, shelling, and cleaning will dislodge many of the insects, and so far as possible these should be collected and burned.

In many cases, to prevent further loss before the corn can be used or sold, it will only be necessary to put it in bags woven sufficiently close to prevent the weevils from pushing through from the outside. They will seldom cut through even the thinnest cotton bagging. It should be remembered, however, that though the bags prevent weevils from entering, they do not prevent the weevils already in the corn at the time of sacking from continuing to breed and damage the grain.

If it is necessary to keep this infested bagged corn for a considerable length of time, the multiplication of weevils within the sacks can be minimized by fumigation or by running the grain through a fanning mill occasionally. The warmer the weather the oftener this is advisable.

The shelled corn must not be stored in large masses or it may heat during periods of high temperature. A slatted crib lined with galvanized-wire netting having ¼-inch meshes is ideal for the storage of the bags of grain, because it not only gives abundant ventilation but excludes rats and mice.

With gas-tight storage bins the weevils in infested corn may be effectively destroyed with carbon disulphid. Farmers' Bulletin 799, entitled "Carbon Disulphid as an Insecticide," which discusses this subject fully, may be obtained without charge from the Division of Publications, United States Department of Agriculture.

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